

Samuel Louis Kleinman, Ph.D.

[REDACTED] Albuquerque, NM • [REDACTED] • [REDACTED]

EDUCATION**Northwestern University**, Evanston, IL 2007-2012

Ph.D. in Physical/Analytical Chemistry

Thesis title: Surface-Enhanced Raman Spectroscopy of Single Molecules and Nanoaggregates

Advisor: Professor Richard P. Van Duyne

Kellogg School of Management, Northwestern University, Evanston, IL 2010

Certificate: Management for Scientists and Engineers

8-week course on fundamentals of business and management

University of California at Berkeley, Berkeley, CA 2003-2007

B.S. in Chemistry

LABORATORY/SUPERVISORY EXPERIENCE**New Mexico Department of Health, Scientific Laboratory Division, Toxicology Bureau** 2017-current
Albuquerque, NM*Forensic Toxicology Bureau Chief* 2019-current*Deputy Forensic Toxicology Bureau Chief* 2017-2019

Managed breath alcohol, drug screening, and drug confirmation sections

Developed training materials and training plans for onboarding new analysts

Participated in senior staff meetings, budget planning, and decision making

Performed technical and administrative review on DUI casework

Oversaw external laboratory accreditation for blood alcohol analysis

Oversaw laboratory accreditation with the American Board of Forensic Toxicologists

Hired more than 20 chemist and supervisor personnel

OndaVia, Hayward, CA 2013-2017*Senior Scientist/Operations Director*

Created new tests for rapid trace chemical analysis in industrial water samples

Employed surface treatments to modify bulk properties of nanoparticle substrates

Optimized surface-enhanced and normal Raman spectroscopy for sample quantification

Trained and worked with industrial users to conduct novel SERS-based chemical assays

Utilized Python and SQL to manage and analyze data as well as perform chemometrics

Authored SOPs, safety manuals, SBIR grants, and customer reports

Northwestern University, Evanston, IL*Research Associate/Postdoctoral Fellow* 2012-2013

Designed experiments for transcutaneous detection of peptides and small biomolecules

Sourced and assembled confocal Raman microscope

Graduate Student 2007-2012

Mastered nanoparticle and single-molecule SERS, electrochemical SERS

Used and maintained high vacuum equipment, sputtering, and metal evaporation systems

Implemented tunable ultrafast lasers for microscope-coupled spectroscopy

Utilized LabVIEW and MATLAB to conduct and analyze experiments

Analytical Services Laboratory Assistant 2007-2008**GOVERNMENT
EXHIBIT**

1

August 5, 2020

USA v. Julian Garcia_03920

Maintained and trained new users of GC, GC-MS, HPLC-MS, LCQ, ICP, FTIR equipment

University of California, Berkeley, Berkeley, CA

2005-2007

Undergraduate Research Internship

Growth and analysis of CdSe semiconductor nanoparticles

FORENSIC TOXICOLOGY COURT APPEARANCES

2nd District Court in Albuquerque, NM

Testified as expert in forensic toxicology, December 31, 2019

Farmington Municipal court in Farmington, NM

Qualified as expert in forensic toxicology, January 14, 2020

5th District Court in Roswell, NM

Testified as substitute analyst, November 19, 2019

Otero County Magistrate court in Alamogordo, NM

Qualified as expert in forensic toxicology, November 8, 2019

10th District court in Tucumcari, NM

Qualified as expert in forensic toxicology, July 11, 2019

11th District Court in Aztec, NM

Testified as substitute analyst, July 17, 2019

8th District Court in Taos, NM

Qualified as expert in forensic toxicology & evaluation of SFSTs, May 30, 2019

11th District Court in Aztec, NM

Qualified as expert in forensic toxicology, January 16, 2019

Rio Arriba County Magistrate court in Espanola, NM

Qualified as expert in forensic toxicology, July 11, 2019

McKinley County Magistrate Court in Gallup, NM

Qualified as expert in chemical and alcohol analysis (substitute analyst), January 22, 2019

Valencia County Magistrate Court in Los Lunas, NM

Qualified as expert in forensic toxicology, September 5, 2019

Sandoval County Magistrate Court in Bernalillo, NM

Qualified as expert in forensic toxicology, August 5, 2020

Los Alamos County District Court in Santa Fe, NM

Qualified as expert in forensic toxicology, September 27, 2019

1st District Court in Santa Fe, NM

Grand jury setting, expert testimony, October 1, 2019

August 5, 2020

Los Alamos Municipal Court in Los Alamos, NM
 Qualified as expert in forensic toxicology, February 6, 2019

PROFESSIONAL MEMBERSHIPS

Society of Forensic Toxicologists, Associate Member	2019-current
Member, Association of Public Health Laboratories	2017-current

PROFESSIONAL MEETINGS

American College of Medical Toxicologists, Forensic Toxicology Seminar	2019
Society of Forensic Toxicologists, Annual Meeting	2018 & 2019
American College of Medical Toxicologists, Annual Scientific Meeting	2018
California Association of Toxicologists Semi-Annual Meeting	2017

TRAINING MODULES & CLASSES

Applied Pharmacokinetics, 15-hour online course Administered by Center for Forensic Science Research and Education	2020
Driving High, the Emerging DUI Presented by the Association of Public Health Laboratories	2019
The Robert F. Borkenstein Course on Alcohol and Highway Safety	2018
The Robert F. Borkenstein Course on The Effects of Drugs on Human Performance and Behavior	2017
Forensic Pharmacology, 3-day online course Administered by Center for Forensic Science Research and Education	2017
Intoxilyzer 8000 Breath Alcohol Analysis Instrument Operation, Maintenance, & Calibration Presented by CMI, Inc. and hosted at SLD	2020
2020 Online Symposium: Current Trends in Forensic Toxicology, 15-hour online course Administered by Center for Forensic Science Research and Education	2020
New Mexico Drug Recognition Expert Workshop and Demonstration Presented by NMDRE State coordinator and hosted by Samuel Kleinman	2019
Intoxilyzer 8000 Training Presented by Eleanore Leichtenberg and hosted at SLD	2019
Thermo Scientific Unity Orbitrap Training, 3-day intensive course On-site at New Mexico Scientific Laboratories	2018
Session I: The synthetic Drug Crisis – Identifying NPS in Forensic Casework Webinar hosted by National Institute of Justice	2018
Living In a Union Environment Presented by Sandy Martinez, Labor Relations Division Director, NM State Personnel Office	2018
Essentials for Supervisors, 4-day intensive course Hosted by David Markwardt Consulting at NMDOH	2018

August 5, 2020

PUBLICATIONS/PATENTS

Kleinman, S. L.; Peterman, M. C.; Benhabib, M.; Cheng, M. T.; Hudson, J. D.; Mohler, R. E. “Rapid Quantification of 4,4’-Methylenedianiline by Surface-Enhanced Raman Spectroscopy” *Anal. Chem.*, 2017, 89, 13190—13194

Kleinman, S. L.; Frontiera, R. R.; Henry, A.-I.; Dieringer, J. A. and Van Duyne, R. P. “Creating, characterizing, and controlling chemistry with SERS hot spots” *Phys. Chem. Chem. Phys.*, 2013, 15, 21—36

Kleinman, S. L.; Sharma, B.; Blaber, M.G.; Henry, A.-I.; Valley, N.; Freeman, R. G.; Natan, M. J.; Schatz, G. C. and Van Duyne, R. P. “Structure Enhancement Factor Relationships in Single Gold Nanoantennas by Surface-Enhanced Raman Spectroscopy” *J. Am. Chem. Soc.*, 2012, 135, 301—308

Fahrenbach, A. C.; Sampath, S.; Late, D. J.; Barnes, J. C.; Kleinman, S. L.; Valley, N.; Hartlieb, K. J.; Liu, Z.; Dravid, V. P.; Schatz, G. C.; Van Duyne, R. P.; Stoddart, J. F. “A Semiconducting Organic Radical Cationic Host-Guest Complex” *ACS Nano*, 2012, 6, 9964—9971

Kleinman, S. L.; Ringe, E.; Valley, N.; Wustholz, K. L.; Phillips, E.; Scheidt, K. A.; Schatz, G. C. and Van Duyne, R. P. “Single-Molecule Surface-Enhanced Raman Spectroscopy of Crystal Violet Isotopologues: Theory and Experiment” *J. Am. Chem. Soc.*, 2011, 133, 4115—4122

Paxton, W. F.; Kleinman, S. L.; Basuray, A. N.; Stoddart, J. F. and Van Duyne, R. P. “Surface-Enhanced Raman Spectroelectrochemistry of TTF-Modified Self-Assembled Monolayers” *J. Phys. Chem. Lett.* 2011, 2, 1145—1149

Kleinman, S. L.; Bingham, J. M.; Henry, A.-I.; Wustholz, K. L. and Van Duyne, R. P. “Structural and Optical Characterization of Single Nanoparticles and Single Molecule SERS” *Proceedings of SPIE*, 2010, 7757, 77570J-1—77570J-10

Wustholz, K. L.; Henry, A.-I.; Bingham, J. M.; Kleinman, S. L.; Natan, M. J.; Freeman, R. G.; Van Duyne, R. P. “Exploring Single-Molecule SERS and Single-Nanoparticle Plasmon Microscopy,” In *Plasmonics: Metallic Nanostructures and Their Optical Properties VII*, *Proceedings of SPIE*, 2009, 7394, 739403-1—739403-10

Dieringer, J. A.; Wustholz, K. L.; Masiello, D. J.; Camden, J. P.; Kleinman, S. L.; Schatz G. C.; Van Duyne, R.P. “Surface-Enhanced Raman Excitation Spectroscopy of a Single Rhodamine 6G Molecule,” *J. Am. Chem. Soc.* 2008, 131, 849—854

Peterman, M.C.; Benhabib, M.; Kleinman, S. L. “Portable Water Quality Instrument” US Patent Grant # 10247673, 10254229

Peterman, M.C.; Benhabib, M.; Ariza, C. A.; Kleinman, S. L. “Measuring concentration of analytes in liquid samples using surface-enhanced Raman spectroscopy” US Patent Grant # 9863824, 10444216

POSTERS

Kleinman, S. L.; Wustholz, K.; Valley, N.; Ringe, E.; Phillips, E.; Scheidt, K.; Schatz, G.; Van Duyne, R. P. “Isotope-edited Single-molecule Surface-enhanced Raman Spectroscopy of Crystal Violet,” 240th ACS National Meeting; Boston, MA. 2010

Dieringer, J.; Wustholz, K.; Phillips, E.; Kleinman, S. L.; Scheidt, K. A.; R.; Van Duyne, R. P. “New Isotope-Edited Chromophores for Single-Molecule Surface-Enhanced Resonance Raman Spectroscopy,” Materials Research Science and Engineering Center Annual Meeting; Evanston, IL. 2008

Wustholz, K.; Dieringer, J.; Kleinman, S.; Van Duyne, R. P. "Wavelength-Scanned Single-Molecule Surface Enhanced Raman Spectroscopy," Gordon Conference on Vibrational Spectroscopy; South Hadley, MA. 2008

SERVICE

<i>Big Brother</i> , Big Brothers Big Sisters of Central New Mexico	2017-2018
<i>Member</i> , NU Chemistry Department Graduate Liaison Committee	2008-2012
<i>Social Chair</i> , Phi Lambda Upsilon, Alpha Gamma Chapter	2010-2011
<i>Participant</i> , 'All Scout Nano-Day'	2008-2013
<i>Organizer</i> , 'All Scout Nano-Day'	2009

August 5, 2020